

When Is A Rose Not A Rose?

Subject: Life science, botany, writing

Grade: 6-8

Lesson Topic: Defining plants as weeds

Length: Long-term

Learner Objective:

Having been introduced to the basics of plant biology, students will use that knowledge to research the diversity of invasive plant characteristics and adaptations.

Students will understand why some plants are considered weeds.

Students will understand the adaptations and conditions that enable weeds to spread and become established.

Introduction:

Plants have evolved over millions of years and have developed a wide range of adaptations for the [ecosystems](#) where we find them today. Because plants cannot move, they have developed means to best take advantage of available resources, to fend off insects, disease, and animals, and to compete with other plants for nutrients, water and sunlight. Therefore, each plant occupies a particular [niche](#) within the environment.

Content:

[Weeds](#) are any plant that is unwanted, one that grows in an area to which it was not adapted (thus, a rose could be a weed!). Besides growing in plant [communities](#) where it is unwanted, in order for a plant to become an invasive species it must be able to grow and reproduce quickly, out-competing the native plants for nutrients, water and sunlight. Besides disrupting the [biodiversity](#) of the native plant community, weeds also become a nuisance to humans (degrading the land, altering crop or [range](#) yields, become poisonous [forage](#) to livestock, altering water tables, etc.)

As in all healthy ecosystems, there is a balance between the species that form that ecosystem. Plants that are introduced to new ecosystems often arrive without the diseases, insects, and animals that would normal keep the population of that plant in check... in other words, invasive weed species are native plants that have been introduced into the wrong ecosystem!

Using the list of invasive plant species for your area, students will research and report the characteristics and adaptations of a particular alien. The research they do will be shared with the rest of the class and serve as foundation knowledge for the other activities within this plant unit of *Aliens In Your Neighborhood*.

Materials and Supplies:

Invasive Plants list for your area (see Resources section for sources)

Student worksheets (at end of this lesson)

Roses, ornamental plants, invasive weed species (see Resources section for models of invasive weeds)

Anticipatory Set:

Have a bouquet of roses at the front of the room and at the beginning of class ask the students if a rose is a weed. Offer examples of other plants (ex. Native plants, ornamental plants (from a nursery) and invasive weeds) and pose the same question. Allow an open discussion about what a weed is, and let the students create their own definition of a weed.

Activity Outline:

Using the list of invasive species in your area, assign a different plant to each student (this is usually easiest with a random “draw from the hat”). Depending on the number of Aliens in your area and number of students you may want to create “scientific research teams.”

Remind the students of the basic outline found in most reports:

Title: catches the reader’s eye.

Attention getter: gets the reader’s attention.

Introduction: tells the reader what you (the writer) are going to say.

Body: lists all the facts that support the writer’s topic statements.

Conclusion: tells the reader what you just said and allows for the writer’s opinion.

Bibliography: lists the sources so that the reader can easily find them if they are still skeptical.

A strategy that has proven effective is to have the students attach copies of their resources to their rough draft. Rough drafts can then be “peer reviewed” in class and the attached resources enable students to look for plagiarized statements and provide the writer with an opportunity to practice paraphrasing.

A suggested sequence might include these elements:

1. Introduction to invasive weeds following plant biology unit
2. Description of format for research and reporting (including mini-unit on paraphrasing)
3. Students are assigned plants, begin research, and fill out report outline (see below)
4. Students prepare rough draft
5. Peer review of rough draft (with references attached to draft)
6. Prepare Final Report

Closure and Assessment:

Presentation of Final Report to class (oral).

Provide outline for notes to be taken while listening to the presentation (note outline should be based upon the Four Main Points of the Report Outline (see below).

Assessment may be a test based upon notes taken by students during presentations.

Independent Practice and Related Activities:

Create a poster or display.

Make a taxonomic key.

Contribute the information in a community outreach program.

Resources:

County weed boards or extension offices, state and federal offices and the internet all provide ample information on individual weed species.

The National Plant Database is a great place to start gathering information about individual plants and contains links to your local state: <http://plants.usda.gov/>

Vocabulary:

Adaptation, biodiversity, community, ecosystem, forage, niche, range, weed

National Science Education Standards:

Science as Inquiry - CONTENT STANDARD A:

As a result of activities in grades 5-8, all students should develop

- ☐ Abilities necessary to do scientific inquiry
- ☐ Understandings about scientific inquiry

Life Science - CONTENT STANDARD C:

As a result of their activities in grades 5-8, all students should develop understanding of

- ☐ Structure and function in living systems
- ☐ Reproduction and heredity
- ☐ Regulation and behavior
- ☐ Populations and ecosystems
- ☐ Diversity and adaptations of organisms

Science in Personal and Social Perspectives - CONTENT STANDARD F:

As a result of activities in grades 5-8, all students should develop understanding of

- ☐ Personal health
- ☐ Populations, resources, and environments
- ☐ Natural hazards
- ☐ Risks and benefits
- ☐ Science and technology in society

History and Nature of Science -CONTENT STANDARD G:

As a result of activities in grades 5-8, all students should develop understanding of

- ☐ Science as a human endeavor
- ☐ Nature of science